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10/779,970	02/17/2004	Carl K. Esche JR.	0013.0014	9121

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EXAMINER	
GOLOBOY, JAMES C	
ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/779,970	ESCHE, CARL K.	
	Examiner	Art Unit	
	James Goloboy	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/10/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. All outstanding rejections have been overcome by applicant's amendment of 3/22/07. New grounds of rejection necessitated by the amendment have been set forth below.

Claim Rejections - 35 USC § 102

2. Claims 1-3, 5, 9, 14, 18, and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Soula (U.S. Pat. No. 4,094,802).

Soula, from column 1 line 65 through column 2 line 1, describes the preparation of the reaction product of a polyisobutenyl succinic anhydride (PIBSA) with N,N,N′,N′-tetrakis-(3-aminopropyl)-ethylenediamine which is formed by the reaction of an ethylenediamine, which meets the limitations of the aliphatic amine recited in claims 1 and 3, with acrylonitrile (column 2 lines 58-62), followed by reductive hydrogenation to a primary amine as recited in Claim 1. In columns 3-6 (Examples 1-6), Soula discloses the use of PIBSA with molecular weights falling within the range recited in claim 1. The additive of Soula therefore meets the limitations of claims 1 and 3.

In column 1 lines 58-62, Soula discloses that 1 to 4 moles of acrylonitrile is used per mole of amine, falling within the range recited in claim 2.

In column 2 lines 49-55, Soula discloses that the succinic anhydride and the treated amine are reacted in a mole ratio of between 1:1 and 4:1, falling within the range of Claim 5.

In column 3 lines 1-7, Soula teaches that the reaction product may be present in an amount of 1 to 10% by weight in a lubricating oil, falling within the range recited in Claim 9. In column 3 lines 22-27, Soula teaches that the reaction product may form 1 to 7% of an oil for a petrol engine, or 4 to 10% of an oil for a diesel engine, both falling within the range recited in Claim 9. Additionally, the use of the product as a lubricant additive meets the limitations of Claims 14 and 18. Furthermore, as a the process discloses by Soula for making the additive does not involve the use of sulfur or phosphorus, the additive clearly meets the limitations of Claim 39.

3. Claims 1, 14, 17, 19, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Gutierrez (U.S. Pat. No. 5,643,859).

In column 1 lines 14-22, Gutierrez discloses a dispersant prepared from the reaction of Koch functionalized polymers and polyamines. In column 3 lines 14-34 Gutierrez discloses that the Koch functionalized polymers meet the limitations of the functionalized polymer of claim 1. In columns 16-17 Gutierrez describes that polyamine compounds, and in column 17 lines 9-12 teaches that the polyamines are formed by reacting an amine with acrylonitrile followed by reductive hydrogenation, meeting the limitations of claim 1. In columns 19-20 Gutierrez teaches that the additive can be used in lubricants or fuels, as in claims 14 and 19, and in column 19 lines 5-33 teaches that the additive can be post treated, as in claims 17 and 22.

Claim Rejections - 35 USC § 103

4. Claims 4, 6, 11-12, 16-17, and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soula in view of Papay (U.S. Pat. No. 5,652,201).

The discussion of Soula in paragraph 2 above is incorporated here by reference. The differences between Soula and the currently presented claims are:

i) Soula discloses a lubricant additive comprising a treated amine, but does not disclose a Mannich adduct, or the use of an aromatic treated amine. This relates to Claims 4 and 6.

ii) Soula does not disclose an additional additive. This relates to Claims 11-12, 16, and 21.

iii) Soula discloses a succinimide dispersant, but does not disclose a post treated succinimide. This relates to Claims 17 and 22.

With respect to i), Papay, in columns 20-23, teaches that a dispersant additive for a lubricating composition may be formed by the reaction of an alkylphenol and aldehyde, as recited in Claim 1, further reacted with a polyamine such as the treated amine of Soula. In column 21 lines 20-21 Papay teaches that aromatic polyamines, as recited in claim 4, can be used.

With respect to ii), Soula discloses in column 3 lines 28-29 that additional additives may be combined with the succinimide. Papay, in column 44 lines 57-59 discloses that multiple ("one or more") dispersants may be included in a lubricant composition in order to improve dispersancy, and the additional dispersants may be succinimide or Mannich dispersants as recited in Claims 11, 16, and 21. Papay also teaches in column 45 lines 67-69 that the additional dispersant may be a dispersant-

viscosity index improver, which are well known in the art to comprise a polymer reacted with an amine, as recited in Claims 11, 16, and 21. In column 50 line 51, Papay discloses a preferred concentration of 0-5% for the supplemental dispersant; when combined with the 1 to 7% concentration taught for Soula's additive, this results in a concentration of 1 to 12% by weight of the additive package, strongly overlapping the range recited in Claim 12.

With respect to iii), Papay describes in columns 15-17 succinimide dispersant additives for lubricating composition, such as the type disclosed by Soula, and in columns 23-24 teaches that these additives may be post treated, as recited in Claims 17 and 22.

It would have been obvious to one of ordinary skill in the art to react the treated amine of Soula with a Mannich adduct derived from an alkylphenol and aldehyde, as taught by Papay, as Papay teaches that the product is useful as a dispersant additive in a lubricant. It would have been obvious to post treat the dispersant of Soula in order to impart additional properties such as detergency.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Soula in view of Chung (U.S. Pat. 4,735,736).

The discussion of Soula in paragraph 2 above is incorporated here by reference. Soula discloses a treated amine but not a reaction product with an ethylene-propylene copolymer.

Chung, in the abstract, discloses a multifunctional viscosity index improver-dispersant additive comprising a product derived from an ethylene-propylene copolymer and a polyamine, which may be the treated amine disclosed by Soula. The product taught by Chung also comprises a maleic anhydride, essentially leading to the succinimide discloses by Soula grafted onto an ethylene-propylene copolymer.

It would have been obvious to one of ordinary skill in the art to include the treated amine of Soula in a reaction product including an ethylene-propylene copolymer, as taught by Chung, as the resulting product has both viscosity index improving and dispersant properties, as taught by Chung in column 1 lines 28-33.

6. Claims 13, 19-20, 23, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soula in view of Steckel (U.S. Pat. No. 6,299,655).

The discussion of Soula in paragraph 2 above is incorporated here by reference. Soula teaches the reaction product of a succinic anhydride and a treated amine as a dispersant, but not its use as a fuel additive.

Steckel, in column 2 lines 39-44, teaches amines reacted with hydrocarbyl-substituted succinic anhydrides as a dispersant additive for fuels, meeting Claims 19 and 20. In column 16 lines 36-37 Steckel teaches that these additives may be used in diesel fuels, and in column 16 lines 66-67 teaches that the dispersant additive is present in an amount of 5 to 500 pounds per thousand barrels of diesel fuel, or more preferably 10 to 100 pounds per thousand barrels, with the latter range falling squarely within the ranges recited in Claims 13 and 23. Soula teaches in column 7 lines 13-16 that the

additive may be used in an engine, and Steckel teaches in column 1-2, that nitrogen-containing dispersant, such as those taught by Soula, are effective in reducing deposits in engines, as recited in Claim 35.

It would have been obvious to one of ordinary skill in the art to use the additive of Soula in a fuel composition in the concentrations taught by Steckel for the purpose of preventing deposit buildup, as taught by Steckel in column 1 lines 63-67.

7. Claims 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soula in view of Lambert (U.S. Pat. No. 5,888,947).

This discussion of Soula in paragraph 2 above is incorporated here by reference. Soula discloses in column 3 lines 1-27 a lubricating oil composition including an additive for use in an engine, but does not teach a method for lubricating moving parts with the lubricant.

Lambert, in column 1 lines 21-33, teaches that moving parts can be lubricated by contacting them with a lubricant. The use of the lubricant disclosed by Soula in this method meets Claims 30 and 32. In Lambert's Claim 21 the use a gear lubricant is disclosed, as recited in the currently presented Claim 31.

It would have been obvious to one of ordinary skill in the art to use the lubricant of Soula for the purpose of lubricating moving parts, as taught by Lambert, in order to reduce wear and increase the lifetimes of the moving parts.

8. Claims 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soula in view of Lambert as applied to claim 33 above, and further in view of Papay.

The discussions of Soula in view of Lambert in paragraph 7 above and Soula in view of Papay in paragraph 4 above are incorporated here by reference. Soula in view of Lambert does not disclose a second dispersant additive or a post treated additive.

Papay discloses a second dispersant and a post treated additive for a lubricant composition, as discussed in paragraph 10 above. The method for lubricating moving parts of Soula in view of Lambert further comprising a second dispersant or a post treated additive, as taught by Papay, meets Claims 33-34.

It would have been obvious to one of ordinary skill in the art to include in the method of Soula in view of Lambert a second dispersant additive, as taught by Papay, in order to further reduce deposits, or a post treated additive for the purpose of providing additional functionality to the dispersant of Soula.

9. Claims 10 and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soula in view of Lambert as applied to claim 30 above, and further in view of Galka (U.S. Pat. No. 6,427,647).

The discussion of Soula in view of Lambert in paragraph 7 above is incorporated here by reference. Soula in view of Lambert discloses a method of lubricating moving parts with a lubricant, but does not specifically disclose moving parts of a vehicle. Soula in view of Lambert does disclose that the moving parts may be within an internal combustion engine (Lambert's Claim 11)

Galka discloses a two-stroke internal combustion engine, and in column 1 teaches that the engines may be used in vehicles such as snowmobiles and marine vessels, as recited in Claims 10 and 24. The use of the lubricating method of Soula in view of Lambert in the engine taught by Soula therefore meets the limitations of 10, 24, 25, and 27. Furthermore, an engine is part of a vehicle's drive train, meeting Claim 26 as well.

It would have been obvious to utilize the method of lubricating moving parts in an engine of Soula in view of Lambert in a vehicle, as taught by Galka, to improve the performance and durability of the vehicle.

10. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soula in view of Lambert further in view of Galka as applied to claim 24 above, and further in view of Papay.

The discussions of Soula in view of Lambert in view of Galka in paragraph 9 above and Soula in view of Papay in paragraph 4 above are incorporated here by reference. The combination of Soula, Lambert, and Galka does not disclose a second dispersant additive or a post treated additive.

Papay discloses a second dispersant and a post treated additive for a lubricant composition, as discussed in paragraph 10 above. The method for lubricating the moving parts of a vehicle of Soula, Lambert, and Galka further comprising a second dispersant or a post treated additive, as taught by Papay, meets Claims 28-29.

It would have been obvious to one of ordinary skill in the art to include in the method of Soula in view of Lambert further in view of Galka a second dispersant additive, as taught by Papay, in order to further reduce deposits, or a post treated additive for the purpose of providing additional functionality to the dispersant of Soula.

11. Claims 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soula in view of Steckel as applied to claim 35 above, and further in view of Papay.

The discussions of Soula in view of Steckel in paragraph 6 above and Soula in view of Papay in paragraph 3 above are incorporated here by reference. Soula in view of Steckel does not disclose a second dispersant additive or a post treated additive.

Papay discloses a second dispersant and a post treated additive, as discussed in paragraph 10 above. The method for decreasing deposits of Soula in view of Steckel further comprising a second dispersant or a post treated additive, as taught by Papay, meets Claims 36-38.

It would have been obvious to one of ordinary skill in the art to include in the method of Soula in view of Steckel a second dispersant additive, as taught by Papay, in order to further reduce deposits, or a post treated additive for the purpose of providing additional functionality to the dispersant of Soula.

12. Claims 1-3, 8-9, 14-15, 17-18, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Emert (U.S. Pat. No. 5,872,084) in view of Soula.

In column 3 lines 4-12, Emert discloses a functionalized hydrocarbon derivatized with heavy polyamine and a second amine that is useful as a dispersant additive for lubricants. In column 5 lines 38-54 (including structure I), Emert discloses that the functionalized hydrocarbon can be a polymer, meeting the limitations of the functionalized hydrocarbon of claim 1. In column 18 line 12-15, Emert discloses that the heavy polyamine can be prepared by cyanoethylation of polyethylene or polypropylamine pentamines or hexamines followed by hydrogenation. The heavy polyamine of Emert therefore meets the limitations of the treated amine of claim 1, and the use of the second amine meets the limitations of claims 8 and 15. In column 20 lines 46-50 Emert teaches that the reaction product can be post-treated, as in claim 22. In column 20 lines 61-67, Emert teaches that lubricant compositions contain from 0.1 to 10% by weight of the reaction product, meeting the limitations of claims 9, 14, and 18. The difference between Emert and the currently presented claims is that Emert does not describe the process used for cyanoethylating the amines used to form the heavy polyamine.

The discussion of Soula in paragraph 2 above is incorporated here by reference. Soula teaches the cyanoethylation of a primary amine to form a treated amine which can be further reacted to form a dispersant. The use of acrylonitrile, as taught by Soula, as the cyanoethylating agent in the reaction of Emert, and the use of the reaction conditions of Soula, meets the limitations of claims 1-3, 8-9, 14-15, 17-18, 39.

It would have been obvious to one of ordinary skill in the art to form the heavy polyamines of Emert by using the cyanoethylating agent and procedure taught by

Soula, as Soula teaches that such a procedure forms a product that can be further reacted to form a dispersant.

Response to Arguments

13. Applicant's arguments have been considered but are moot in view of the new grounds of rejection. With regard to applicant's argument that it would not have been obvious to use the treated polyamines of Soula to form the Mannich dispersants of Papay, the examiner notes the broad similarities between the polyamines taught by Papay as suitable for use in preparing succinimide dispersants (column 16) and the polyamines suitable for use in preparing Mannich dispersants (columns 21-23).

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Coupland (U.S. Pat. No. 4,250,045) discloses friction modifiers formed from the reaction of an amine and acrylonitrile.

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Goloboy whose telephone number is 571-272-2476. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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